AMENDMENTS TO THE DRAWINGS

Please replace Sheet 1 of 2, containing Figure 1, of the present application, with the enclosed Replacement Sheet which incorporates the desired changes to Figure 1 and which complies with 37 C.F.R. § 1.84.

REMARKS

Status of Claims

Claims 1-5 and new Claims 10-16 are pending in the present application.

Claims 6-9 have been cancelled by the foregoing amendments.

By the foregoing amendments, Claims 1, 2 and 5 have been amended and new Claims 10-16 have added to more clearly recite the features of the present as they are described in the present specification. Applicants believe that the foregoing amendments to Claims 1, 2 and 5, and new Claims 10-16 are supported by the disclosure provided in the as-filed specification, published as US Patent Application Pub. No. 2004/0093860 (the "Specification"), in paragraphs [0005], [0022], [0023], [0025], [0028] and [0029].

Amendments to the Specification

The foregoing amendments to the present Specification have been made to correct recently-discovered minor errors. For example, paragraphs [0039] and [0066] of the Specification have been amended to correct the reference number for the waste stream addition/injection points and match the labeling in Figure 1. Similarly, paragraph [0057] has been amended to correct the third occurrence of reference number "114." The foregoing amendments also correct an error in paragraph [0058], which now properly states that the feature identified by reference number 117 is a supplemental oxidant stream.

Lastly, Applicants discovered that the labels of the examples of the present application are incorrectly reversed. With the amendments, the present Specification now correctly states that the example provided in paragraphs [0063]-[0064] is a Comparative Example demonstrating the prior art, and the example provided in paragraphs [0065]-[0066] is the Example which demonstrates the present invention (note: the gaseous waste stream discussed in [0066] comprises "inerts, aliphatic hydrocarbons, and other reactive waste components").

No new matter is believed to be introduced by any of the amendments to the present Specification. Entry of the foregoing amendments to the Specification is hereby respectfully requested.

Amendments to the Drawings

Paragraph [0043] of the Specification states, in part, ". . . the dashed lines 29 represent boundaries between the various zones . . . ," however, reference number 29 was not present in Figure 1 of the originally filed drawings. The accompanying Replacement Sheet contains only Figure 1 and now includes reference number 29 with a lead line, which had been missing. It is believed that the foregoing correction does not introduce any new matter to the present application and entry of the Replacement Sheet is, therefore, respectfully requested.

Claims Rejections Under 35 U.S.C. §112, second paragraph

On page 2 of the Office Action, Claims 1-9 have been rejected under 35 U.S.C. §112, second paragraph, due to the use of terms which lack antecedent basis. It is believed that the foregoing amendments to the claims address these issues and that all terms now have the required antecedents.

Present Invention Recited In Current Claims

The present invention relates generally to a method for reducing the emission of waste oxide gas from a waste destruction process (see the Specification, paragraph [0022]. More particularly, as recited in amended independent Claim 1, the method is applicable to a waste destruction process performed in a multi-zone thermal oxidizer which comprises a primary combustion zone and one or more waste destruction zones positioned downstream of the primary combustion zone (see Specification, paragraphs [0022], [0023] and [0028], and Figs. 1 and 2).

To summarize, the method of the present invention recited in Claim 1 involves the steps of: (a) directing an oxidant stream and a combustion fuel stream to the primary combustion zone of the thermal oxidizer (see Specification, paragraphs [0023

and [0028]]; (b) combusting oxygen and fuel components in the primary combustion zone to produce a hot stream; (c) directing the hot stream to the one or more waste destruction zones; (d) directing at least a portion of a waste stream comprising waste components and reactive waste components, to the one or more waste destruction zones; and (e) destroying the waste and reactive waste components in the primary waste destruction zone to produce an effluent stream (see Specification, paragraph [0044]).

The significance of having reactive waste components in the waste stream is explained in paragraph [0032] of the present Specification, i.e., that " . . . some of the reactive waste components form radicals that are capable of removing oxygen from WOG [waste oxide gas] compounds, such as NOx, thereby converting them into inert compounds such as diatomic nitrogen and the like." Thus, it is believed that when the reactive waste components are exposed to the high temperatures of the primary waste destruction zone, but temperatures which are not as high as those in the primary combustion zone, thermally initiated radicals are formed which then react with waste oxides that were formed in the primary combustion zone, or which may have already been present in the waste stream prior to combustion.

Claim Rejections Under 35 U.S.C. §§ 102(b) and 103(a)

On pages 2-3 of the Office Action, Claims 1-2, 4-7 and 9 have been rejected, under 35 U.S.C. § 102(b), as being anticipated by Beer, U.S. 5,617,715. On pages 3-5 of the Office Action, Claims 1-9 have been rejected, under 35 U.S.C. § 103(a), as being obvious and, therefore, unpatentable over Cochran et al. US 6,499,412 in view of Beer '715. Applicants respectfully traverse these rejections for the reasons which follow.

Beer '715 fails to anticipate the method of the present invention because it fails to disclose all the features recited in amended independent Claim 1. Particularly, the process disclosed in Beer '715 does not involve destruction of waste streams in multi-zone thermal oxidizers, as recited in Claim 1. Rather, Beer '715 concerns technology to destroy NOx contained in an effluent stream derived from burning coal or other heavy fuel in a boiler, by directing the effluent to a simple gas combustor which combusts a

hydrocarbon fuel to provide power to a gas turbine. Persons of ordinary skill would note that the boiler of Beer '715 is the apparatus that creates the NOx, and that Beer '715 teaches that, after the NOx is formed and emitted from the boiler, it is forwarded to another, separate apparatus (i.e., the gas combustor) for oxidation and destruction. Thus, application of the teachings of Beer '715 to a multi-zone thermal oxidizer (as in the present invention) would simply result in allowing any waste oxide gases in the multi-zone thermal oxidizer to be emitted therefrom in an effluent stream, which would then be combusted in a separate unit. The present invention, as recited in amended Claim 1, on the other hand, provides a method for minimizing waste oxide gas emissions from a multi-zone thermal oxidizer (i.e., the apparatus which creates the waste oxide gases), by operating that same apparatus in a particular manner which includes directing a waste stream comprising waste components and reactive waste components to a waste destruction zone downstream and separate from the primary combustion zone of the multi-zone thermal oxidizer. The disclosure of Beer '715 fails to teach or suggest any modification or alteration to operation of the boiler which would minimize the amount of NOx emitted therefrom. Thus, Beer '715 teaches away from the present invention by allowing waste oxide gases to be formed and emitted from the apparatus and then destroying the waste oxide gases separately from the source.

Moreover, as explained in paragraphs [0007]-[0008] of the present Specification, there are significant differences between boilers and thermal oxidizers which would discourage persons of ordinary skill from applying NOx-reducing technology for boilers to thermal oxidizers. For example, paragraph [0008] of US'093860 states that "[] blind application of boiler-related methods to industrial thermal oxidizers may result in reduced waste destruction efficiency and frequently generates by-products that are as detrimental to the environment as the waste oxide gases themselves."

Additionally, Beer '715 fails to disclose the feature recited in Claim 1, part (d) wherein the waste stream comprises, among other things, reactive waste components. As disclosed in the present application, the reactive waste components are ". . . waste components that are capable of reacting with oxygen that is part of a waste oxide gas molecule. Examples of such reactive waste components include but are not limited to

aliphatic hydrocarbons, ammonia, acrolein, hydrogen, hydrogen cyanide, carbon monoxide, urea, and aromatics. . ." (see Specification, paragraph [0029]).

Lastly, Beer '715 fails entirely to disclose the step of directing the waste stream containing reactive waste components to one or more waste destruction zones of the thermal oxidizer, as recited in part (d) of amended independent Claim 1. Rather, Beer '715 teaches away from this and teaches that the stream containing NOx is directed to a combustion zone where hydrocarbon fuel is burned, which would be analogous, in the present invention of Claim 1, to feeding the waste stream containing reactive waste components to the primary combustion zone of the thermal oxidizer. It is respectfully noted that the proper comparison of the apparatus described in Beer '715 to that used in connection with the present invention dictates that the fuel-rich zone of Beer '715 is analogous to the primary combustion zone recited in the present Claims and the fuel-lean zone of Beer '715 is analogous to the one or more waste destruction zones. Beer '715 clearly teaches addition of the "flue gas" (which contains the waste oxide, NOx) along with the fuel and air to the fuel-rich zone of the gas combustor (see Beer '715, Col. 4, lines 6-35), rather than to the fuel-lean zone, as in the method of the present invention (which directs the waste stream comprising reactive waste components to the one or more waste destruction zones to react with the waste oxides emitted from the primary combustion ("fuel-rich") zone). Although the Examiner has pointed out that Claim 7 of Beer '715 recites introducing the coal waste gas, at a downstream location, to the first fuel-rich zone, rather than to the fuel-lean zone (i.e., one or more waste destruction zones), as in the present invention recited in amended independent Claim 1.

Based on the foregoing discussion, it is respectfully submitted that Beer '715 fails to anticipate the present invention as recited in amended independent Claim 1, or Claims 2, 4, 5 which depend, directly or indirectly, from Claim 1. Thus, withdrawal of this rejection is hereby requested.

The disclosure provided by Cochran et al. '412 fails to make obvious the present invention, even when combined with the disclosure of Beer '715, because Cochran et al. '412 fails to disclose directing a waste stream comprising waste components and reactive waste components to a destruction apparatus. As discussed hereinabove, the

waste stream according to the method of the present invention must comprise reactive waste components, which will provide the desired radicals to react with and destroy the waste oxides. Furthermore, as the Examiner himself has noted, Cochran et al. '412 fails to disclose or suggest directing the waste stream to a zone other than the combustion zone in which the fuel is combusted. Rather, Cochran et al. '412 describes feeding the waste stream comprising waste oxides to the incinerator, but does not specify location other than to show, in Figure 1, feeding the waste stream, the fuel stream and the oxygen-containing stream to the incinerator at essentially the same position, relative to upstream-downstream considerations. In fact, Cochran et al. '412 addresses the problem of minimizing waste oxide emissions by controlling the "firebox" temperatures in the incinerator (i.e., the temperature in the analogous primary combustion zone) based on stream content analysis and an automated feedback loop. There is no discussion in Cochran et al. '412 concerning the alteration of feed points for various streams as a means for minimizing waste oxide emissions, as in the claimed invention of Claim 1.

Beer '715 fails to remedy the aforesaid deficiencies of Cochran et al. '412 because it fails to teach or suggest directing the waste stream to a zone other than the combustion zone and fails to teach or suggest a waste stream comprising reactive waste components. In fact, the disclosure of Beer '715 teaches the opposite – feeding any waste stream to the combustion zone of a destruction apparatus (gas combustor, incinerator, etc.).

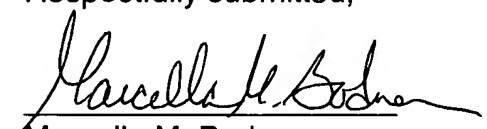
Based on the foregoing discussion, it is respectfully submitted that the present invention, as recited in amended independent Claim 1, is not obvious from the disclosure of Cochran et al. '412, even when combined with the disclosure of Beer '715.

Conclusion

In view of the foregoing amendments and discussion, re-examination and allowance of amended independent Claim 1, as well as of dependent Claims 2-5, are hereby requested. Examination and allowance of new dependent Claims 10-16 is also hereby respectfully requested.

A $120 fee is believed to be due for a one (1)-month extension of time to submit this Amendment. This fee is addressed by a deposit account charge authorization contained in the accompanying Petition for Extension of Time. No additional fees are believed to be due. If, however, any such fees, including petition and extension fees, are due in connection with the submission of this Amendment, the Commissioner is hereby authorized to charge such fees to **Deposit Account No. 18-1850**. In the meantime, please direct all future correspondence relating to the present application to the undersigned attorney.

Respectfully submitted,



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